

WHAT IS CLAIMED IS:

1. A sensing device which comprises:

at least one optical fiber supported in a structure;

a movable mass supported within the structure; and

means for detecting changes in tension in said at least one optical fiber due to movement of said movable mass.

2. A sensing device according to claim 1 wherein said detecting means comprises at least one fiber optic Bragg grating written into a core of each of said optical fibers.

3. A sensing device according to claim 2 wherein said sensing device has a plurality of optical fibers and a first fiber optic Bragg grating associated with a first one of said optical fibers has a first reflective wavelength and a second fiber optic Bragg grating associated with a second one of said optical fibers has a second reflective wavelength, which second reflective wavelength is different from said first reflective wavelength.

0983047-104501

or high acceleration and to limit the maximum tension seen by each of said optical fibers.

10. A sensing device according to claim 1 wherein said sensing device has a single optical fiber having a serpentine configuration with a plurality of legs and wherein said detecting means comprises a detector in each of said legs.

11. A sensor for detecting roll in a towed array, said sensor comprising:

a plurality of optical fibers supported in a structure;

a movable mass supported within the structure by said optical fibers; and

means for detecting changes in tension in each of said optical fibers due to movement of said movable mass.

12. A sensor according to claim 11 wherein said optical fibers are the only deformable structure within the sensor.

0983047-101501
T05F07-40E860

13. A sensor for detecting pitch in a towed array comprising:

a plurality of optical fibers supported in a structure;

a movable mass supported within the structure by said
plurality of optical fibers; and

means for detecting changes in tension in each of said
optical fibers due to movement of said movable mass.

14. A sensor according to claim 13 wherein said optical fibers
are the only deformable structures in said sensor.

09033047 101501
FOUO